

# A Study on Knowledge, Attitude and Practice of Allopathic Practitioners Regarding Revised National Tuberculosis Control Programme (RNTCP) of India at Lucknow City

S.K. Verma, R. Prasad, R.A.S. Kuswaha and M.Z. Idris

Department of Pulmonary Medicine, King George Medical University, Lucknow (Uttar Pradesh), India

## Abstract

**Background.** One of the important reasons for the emergence of drug-resistant tuberculosis (TB) has been inadequate knowledge and practice of the treatment of TB. The present study was designed to assess the knowledge, attitude and practice of allopathic practitioners of Lucknow with regard to the Revised National Tuberculosis Control Programme (RNTCP) of India.

**Methods.** All allopathic doctors in the city who have experience of more than six months, who see more than five cases of TB per month were interviewed in this questionnaire-based, cross-sectional study.

**Results.** A total of 772 doctors were interviewed. Only 119 (15.4%) claimed to be trained in RNTCP; more than half (n = 452; 58.5%) did not want to take training. Although 88.1% said that clinical examination and sputum testing are required to make the diagnosis, 76.3% doctors said that three sputum samples are required for the diagnosis. Only 43.3% were aware that more than two weeks of cough is a criteria for suspecting TB. Nearly half of the doctors (49.8%) believed that in order to label a patient sputum smear-positive, the chest radiograph should be abnormal. The correct knowledge about categorisation as Category I and Category II was done by 20.4%, and 10.1% respectively; 21.2% still believed that Category III existed. Majority of doctors (92.1%) had a good attitude about RNTCP.

**Conclusions.** Most of the practitioners were aware about RNTCP; however, they did not get training from RNTCP. They should be trained time to time for better services of RNTCP. [Indian J Chest Dis Allied Sci 2017;181:185]

**Key words:** RNTCP, Practitioners, Knowledge, Attitude, Practices.

## Introduction

Tuberculosis (TB) is the leading cause of death from a curable infectious disease.<sup>1</sup> India has one of the highest TB burdens in the world. Government of India introduced the National Tuberculosis Control Programme in 1962, which failed to achieve their objective. So, in 1993, another programme called the Revised National Tuberculosis Control Programme (RNTCP) came into existence. This study was done to assess knowledge, attitude and practice of allopathic doctors both in the government and private sectors to fill the gap in the knowledge, attitude and practices for further improvement in control of TB.

## Material and Methods

The present study was a cross-sectional, questionnaire-based which included all doctors from the city of Lucknow (both private and government) who were qualified allopathic practitioners having recognised degree/diploma with at least six months

of experience and were seeing at least five cases of TB per month. The questionnaire was developed and validated on 25 doctors from the Indian Medical Association (IMA). The questionnaire was based on the knowledge, attitude and practice. A research investigator visited the doctors to fill the questionnaire. The questionnaire items were based on showing the knowledge, attitude and practice of the practitioners. The responses were judged as per the RNTCP guidelines. In the present study, prescriptions issued by allopathic postgraduate physicians collected from patients to judge the accuracy of prescribing practices.

## Results

A total of 772 doctors (654 males) fulfilled our criteria of selection and were interviewed. Of these 165 (21.4%) were from government sector and 607 (78.6%) were from private sector; 567 (73.4%) were specialists and among them 85 (15%) were specialists in TB and chest diseases (Table 1).

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**Correspondence and reprint requests:** Dr S.K. Verma, Professor, Department of Pulmonary Medicine, King George Medical University, Lucknow-226 003 (Uttar Pradesh), India; E-mail: drskverma@rediffmail.com

Table 1. Qualification and type of practice

Qualification	Government (n=165) No. (%)	Private (n=607) No. (%)	Total (n=772) No. (%)
MBBS	14 (8.5)	191 (31.5)	205 (26.6)
MD (Medicine)	70 (42.4)	245 (40.4)	315 (40.8)
MD (Paediatrics)	52 (31.5)	115 (18.9)	167 (21.6)
MD (TB & Chest)	29 (17.6)	56 (9.2)	85 (11.0)

While 763 (98.8%) of the practitioners were aware of RNTCP programme, only 119 (15.4%) had received training and only 320 (41.5%) were interested in receiving training. Six hundred and seventy-two (88.1%) had knowledge about diagnosis but only 330 (43.3%) were aware about the duration of cough for suspecting TB and 163 (21.4%) were aware about the number of sputum samples recommended for evaluation of TB (Table 2). Though 609 (79.8%)

practitioners knew about the number of categories for treatment of TB, majority of them were unable to properly categorise the patient (Table 3). While majority of practitioners were aware of the regimen for treatment of TB, nearly 40% were not aware of the doses of individual drugs (Table 4).

Seven hundred and three (92.1%) had good attitude about RNTCP (Table 5). With respect to knowledge about duration of cough, number and quality of sputum sample required for the diagnosis of TB, diagnosis of sputum smear-positive and -negative TB, knowledge about categories of treatment, treatment regimen in Category I and Category II, proper dosage of rifampicin, isoniazid, ethambutol and streptomycin and follow-up in RNTCP was better among doctors of government sector as compared to those of private sector ( $p < 0.05$ ). Out of 101 prescriptions by allopathic postgraduate physicians, 70% were faulty in respect of drug dosages.

Table 2. Distribution of respondents by knowledge about training status and diagnosis under RNTCP.

Variable	Government (n=165) No. (%)	Private (n=607) No. (%)	Total (n=772) No. (%)	Chi-square	p-value
<b>Training status</b>				41.7	<0.001
received any training	52 (31.5)	67 (11.0)	119 (15.4)		
Not received	113 (68.5)	540 (89.0)	653 (84.6)		
<b>Wish to get training</b>				16.2	<0.001
Yes	95 (57.6)	225 (37.1)	320 (41.5)		
No	70 (42.4)	382 (62.9)	452 (58.5)		
<b>Knowledge about RNTCP</b>				0.775	0.679
Yes	162 (98.2)	601 (99.0)	763 (98.8)		
No	3 (1.8)	6 (1.0)	9 (1.2)		
<b>Knowledge about diagnosis</b>				1.101	0.315
Right response	139 (85.8)	533 (88.7)	672 (88.1)		
Wrong response	23 (14.2)	68 (11.3)	91 (11.9)		
<b>Knowledge about duration of coughing</b>				15.546	0.000
Right response	48 (29.6)	282	(43.3)		
Wrong response	114 (70.4)	319	(56.7)		
<b>Knowledge about no. of sputum samples</b>				91.929	0.000
Right response	79 (48.8)	84	(21.4)		
Wrong response	83 (51.2)	517	(78.2)		
<b>Type of sputum samples</b>				47.812	0.000
Right response	81 (50.0)	470 (78.2)	551 (72.2)		
Wrong response	81 (51.0)	131 (21.8)	212 (27.8)		

**Table 3. Distribution of respondents by knowledge about number of sputum samples and inclusion of patients with tuberculosis in different categories of treatment under RNTCP of TB patients.**

Variable	Government (n=162) No. (%)	Private (n=601) No. (%)	Total (n=763) No. (%)	Chi-square	p-value
<b>Diagnosis of sputum-positive pulmonary tuberculosis</b>				19.679	0.000
Right response	94 (58.0)	223 (37.1)	317 (41.5)		
Wrong response	68 (42.0)	378 (62.9)	446 (58.5)		
<b>Diagnosis about sputum smear-negative pulmonary tuberculosis</b>				77.76	0.000
Right response	58 (35.8)	51 (8.5)	109 (14.3)		
Wrong response	104 (64.2)	550 (91.5)	654 (85.7)		
<b>Category of patients</b>				108.848	0.000
Right response	82 (50.6)	527 (87.7)	609 (79.8)		
Wrong response	80 (49.4)	74 (12.3)	154 (20.2)		
<b>Patient inclusion in Category I</b>				7.991	0.005
Right response	46 (28.4)	110 (18.3)	156 (20.4)		
Wrong response	116 (71.6)	491 (81.7)	607 (79.6)		
<b>Patient inclusion in Category II</b>				0.037	0.848
Right response	17 (10.5)	60 (10.0)	77 (10.1)		
Wrong response	145 (89.5)	541 (90.0)	686 (89.9)		
<b>Patient inclusion in Category III</b>				0.269	0.604
Category III does not exist	130 (80.2)	471 (78.4)	601 (78.8)		
<b>Others</b>	32 (19.8)	130 (21.6)	162 (21.2)		

**Table 4. Distribution of respondents by knowledge about treatment regimen, its duration and follow-up of patients under RNTCP.**

Variable	Government (n=162) No. (%)	Private (n=601) No. (%)	Total (n=763) No. (%)	Chi-square	p-value
<b>Treatment regimen Category I</b>				8.474	0.004
Right response	137 (84.6)	442 (73.5)	579 (75.9)		
Wrong response	25 (15.4)	159 (26.5)	184 (24.1)		
<b>Treatment regimen Category II</b>				4.89	0.027
Right response	127 (78.4)	418 (69.6)	545 (71.4)		
Wrong response	35 (21.6)	183 (30.4)	218 (28.6)		
<b>Treatment regimen Category III</b>				0.206	0.650
Right response (does not exist)	122 (75.3)	442 (73.5)	564 (73.9)		
Wrong response	40 (24.7)	159 (26.5)	199 (26.1)		
<b>Dosages</b>					
<i>Rifampicin</i>				16.357	0.000
Right response	138 (85.2)	416 (69.2)	554 (72.6)		
Wrong response	24 (14.8)	185 (30.8)	209 (27.4)		
<i>Isoniazid</i>				6.457	0.011
Right response	121 (74.7)	385 (64.1)	506 (66.3)		
Wrong response	41 (25.3)	216 (35.9)	257 (33.7)		
<i>Ethambutol</i>				27.499	0.000
Right response	143 (88.3)	405 (67.4)	548 (71.8)		
Wrong response	19 (11.7)	196 (32.6)	215 (28.2)		
<i>Pyrazinamide</i>				0.029	0.864
Right response	98 (60.5)	368 (61.2)	466 (61.1)		
Wrong response	64 (39.5)	233 (38.8)	297 (38.9)		
<i>Streptomycin</i>				6.516	0.011
Right response	113 (69.8)	353 (58.7)	466 (61.1)		
Wrong response	49 (30.2)	248 (41.3)	297 (38.9)		
<b>Knowledge about follow up in RNTCP</b>				43.227	0.000
Right response	67 (41.4)	103 (17.1)	170 (22.3)		
Wrong response	95 (58.2)	498 (82.9)	593 (77.7)		

**Table 5. Attitude about RNTCP and type of practice.**

Observation	Government (n=162) No. (%)	Private (n=601) No. (%)	Total (n=763) No. (%)
Good	132 (81.5)	571 (95.0)	703 (92.1)
Bad	6 (3.7)	2 (0.3)	8 (1.0)
Cannot say	24 (14.8)	28 (4.7)	52 (6.8)

## Discussion

India is one of the highest TB burden countries in the world. One of the major contributing factors for the burden, persistence and development of drug-resistant TB is the inadequate treatment practices and implementation of the treatment programmes.<sup>2-4</sup> A study done by Uplekar and Shepard<sup>5</sup>, showed a lack of awareness among doctors who treat TB patients in their own clinics regarding the standard drug regimens for the treatment of TB recommended by the national and international agencies. While there are a few standard, efficient recommended regimens, 100 private doctors prescribed 80 different regimens, most of which were both inappropriate and expensive. A single person with sputum-positive TB could infect 10-15 others in a year; therefore, early detection of such cases, followed by prompt treatment, is imperative for the successful control of TB in the community. We found that most of the practitioners, both government and private, were MD in General Medicine 315 (40.8%) and MBBS 205 (26.6%). Thus, the general practitioners are the first source of contact with patients, and hence, the importance to train them in RNTCP for better implementation of the programme is of utmost importance. In a study<sup>6</sup> describing the level and quality of TB case management by non-TB control programme physicians in urban Sindh, Pakistan, 80% of patients first sought care from general practitioners.<sup>6</sup>

One hundred and nineteen (15.4%) of the practitioners responded that they had been previously trained in RNTCP. A similar finding was reported in another study<sup>7</sup> of knowledge, attitude and practice among practitioners of public and private sectors. A study from Mumbai<sup>8</sup> found that the delay in treatment according to RNTCP was found to be the initial approach of the patient to the private practitioners. A study from Meerut city<sup>9</sup> showed that 43% of the private physicians had been trained in RNTCP and that only 24% were utilising alternate day regimen. Most of the doctors claimed that they were adequately aware about the RNTCP and its practice. However, on question by question assessment, their knowledge was found to be poor.

Majority of them opined correctly regarding diagnosis of a case of TB. There was a significant difference in knowledge when questioned about the duration of cough required to suspect a case as TB. When asked about the number of sputum samples to be collected for a diagnosis, 600 (78.2%) claimed it was 3 samples; 551 (72.2%) were rightly aware about the spot and early morning sputum sample collection. Knowledge about sputum smear-positive pulmonary TB was right in 317 (41.5%). In a study<sup>10</sup> done among clinicians in a medical college in Kancheepuram, it was found that only 54% were rightly aware about the sputum examination. This was in contrast to the finding by Uplekar *et al*<sup>11</sup> who showed that a majority of private doctors gave little importance to sputum examination and considered the chest radiograph as the single most important diagnostic test for lung TB. Thus, there still appears to be a knowledge gap regarding the diagnosis and treatment of TB.

There was a uniformly good attitude towards the RNTCP in majority of the participants (92.1%). When asked about the reason for not following RNTCP guidelines, majority (64.9%) did not respond (Table 6). However, 35.8% of government doctors said they lacked faith in the programmes. This finding was in contradiction to popular belief that private doctors more than government practitioners lacked faith in alternate day regimen. Uplekar *et al*<sup>12</sup> also noted that although the private practitioners were aware of the TB programme guidelines they were sceptical about the programme and lacked faith in general.

**Table 6. Reasons for not following the RNTCP guidelines and type of practice.**

Observation	Government (n=28) No. (%)	Private (n=461) No. (%)	Total (n=74) No. (%)
Not aware about RNTCP	3 (10.7)	6 (13.0)	9 (12.2)
Don't think it is an effective tool for treatment	10 (35.8)	7 (15.2)	17 (23)
Did not respond to question	15 (53.6)	33 (77.7)	48 (64.9)

Majority of the doctors (90.3%) claimed that they were practicing as per the RNTCP guidelines (Table 7). In a study<sup>13</sup> among practitioners in Hooghly district in India, it was found that only 27% of the private practitioners were using alternate day regimen. Jain<sup>14</sup> reported that normally poor compliance with treatment regimen is considered a major cause of development of drug resistance and relapse. In the present study, prescriptions issued by allopathic postgraduate

physicians were collected from patients to judge accuracy of prescribing practices. Out of 101 prescriptions, 70% were faulty in respect of drug dosages.

**Table 7. Response to practice of RNTCP guidelines and type of practice.**

Response	Government (n=162) No. (%)	Private (n=601) No. (%)	Total (n=763) No. (%)
Yes	134 (82.7)	555 (92.3)	689 (90.3)
No	28 (17.3)	46 (7.7)	74 (9.7)

In a study<sup>15</sup> designed to evaluate whether there had been management practices that deviated from established guidelines, and whether these decisions were associated with the acquisition of multi-drug resistance and adverse medical sequelae among a group of patients with multi-drug resistant pulmonary TB, the most common errors were the addition of a single drug to a failing regimen, failure to identify pre-existing or acquired drug resistance, initiation of an inadequate primary regimen, failure to identify and address non-compliance and inappropriate isoniazid preventive therapy. The multidrug-resistance acquired through the errors resulted in prolonged hospitalisations, treatment with more toxic drugs and high risk resectional surgery. Practice among both government and private practitioners has shown betterment over the years probably due to the improvement in the training and awareness about the RNTCP. Roth and Karner<sup>16</sup> conducted a study from 1986-1991 and investigated the accuracy of treatment monitoring performed by the practitioners in the outpatient treatment of pulmonary TB, the authors concluded that even a highly standardised protocol of short-course chemotherapy for TB required a certain level of experience and compliance on the part of the practitioners, every case of pulmonary TB should be reviewed at least twice by a chest physician.

## Conclusions

The present study does bring out significant findings with respect to the knowledge gap in diagnosis and treatment of tuberculosis, especially among private practitioners. Hence, we recommend that repeated training of all kinds of practitioners about the RNTCP from time-to-time is required in order to enhance the implementation and probably sort the issues the programme was actually aimed for, namely, "control of tuberculosis and prevention of emergence of resistance".

## References

1. Dye C. Global epidemiology of tuberculosis. *Lancet* 2006;367:938-40.
2. Liang L, Wu Q, Gao L, Hao Y, Liu C, Xie Y, et al. Factors contributing to the high prevalence of multidrug-resistant tuberculosis: a study from China. *Thorax* 2012;67:632-8.
3. Caminero JA. Multidrug-resistant tuberculosis: epidemiology, risk factors and case finding. *Int J Tuberc Lung Dis* 2010;14:382-90.
4. Lonnroth K, Raviglione M. Global epidemiology of tuberculosis: prospects for control. *Semin Respir Crit Care Med* 2008;29:481-91.
5. Uplekar MW, Shepard DS. Treatment of tuberculosis by private general practitioners in India. *Tubercle* 1991;72:284-90.
6. Marsh D, Hashim R, Hassany F, Hussain N, Iqbal Z, Irfanullah A, et al. Front-line management of pulmonary tuberculosis: an analysis of tuberculosis and treatment practices in urban Sindh, Pakistan. *Tuber Lung Dis* 1996;77:86-92.
7. Vandan N, Ali M, Prasad R, Kuroiwa C. Assessment of doctors' knowledge regarding tuberculosis management in Lucknow, India: a public private sector comparison. *Public Health* 2009;123:489-99.
8. Tamhane A, Ambe G, Vermund SH, Kohler CL, Karande A, Sathiakumar N. Pulmonary tuberculosis in Mumbai, India: factors responsible for patient and treatment delays. *Int J Prev Med* 2012;3:569-80.
9. Yadav A, Garg SK, Chopra H, Bajpai SK, Bano T, Jain S, et al. Treatment practices in pulmonary tuberculosis by private sector physicians of Meerut, Uttar Pradesh. *Indian J Chest Dis Allied Sci* 2012;54:161-3.
10. Shrivastava Ram Bihari Lal S, Shrivastava SP, Ramasamy J. Knowledge and practices about Revised National Tuberculosis Control Program among clinicians of a medical college in India: a cross-sectional study. *Progress Health Sci* 2013;3:94-103.
11. Uplekar MW, Juvenkar SK, Parande SD, Dalai DB, Khanvilkar SS, Vadair SS, et al. Tuberculous management in private practices and its implications. *Indian J Tuberc* 1996;43:19.
12. Uplekar M, Juvekar S, Morankar S, Rangan S, Nunn P. Tuberculosis patients and practitioners in private clinics in India. *Int J Tuberc Lung Dis* 1998;2:324-9.
13. Datta K, Bhatnagar T, Murhekar M. Private practitioners' knowledge, attitude and practices about tuberculosis, Hooghly district, India. *Indian J Tuberc* 2010;57:199-206.
14. Jain RF. Faulty presentation: an avoidable cause of MDR-TB. *Indian J Tuberc* 1998;45:141.
15. Artin Mahmoudi MD, Michael D, Iseman MD. Pitfalls in the care of patients with tuberculosis, common errors and their association with acquisition of drug resistance. *JAMA* 1993;270:65-68.
16. Roth TB, Karner W. Short-course therapy of pulmonary tuberculosis: Doctor's compliance. *Tuber Lung Dis* 1996;77:93-97.

